

# PATENT SPECIFICATION

1,022,509

1,022,509



Date of Application and filing Complete

Specification: November 5, 1964.

No. 45112/64

Application made in Germany (No. E25834iii/45h) on  
November 8, 1963.

Complete Specification Published: March 16, 1966.

© Crown Copyright 1966.

Index at Acceptance:—B8 N6A1A; A1 M 11, 12).

Int. Cl.:—G 01 f // A01k.

GT. BRIT.  
DIV.

## COMPLETE SPECIFICATION

### DRAWINGS ATTACHED

#### Device for the Automatic Charging of Feed Trays

We, ETABLISSEMENTS P. LECIEUX & CIE. S.A.R.L., a French Company, of Rue du Riez, Frankreich, Annroeuillin/Nord, France, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a device for the automatic charging of so-called feed trays in poultry-rearing establishments with a uniformly dosed quantity of feedstuff, utilizing a feedstuff supply device to which there is connected a plurality of feed trays.

In large poultry-rearing establishments the problem exists of a supply of feedstuffs to all birds in regularly measured quantities. Hitherto this problem was solved by collecting and storing in a reservoir the quantity of feedstuff due to each bird, multiplied by the number of birds, and then conveying this total quantity into the poultry house for example by way of feedstuff chains or feedstuff worms. The phenomenon occurred here that at the beginning of the feedstuff chain, that is to say at the entry, the birds collected and already commenced to eat there. The stronger birds here had a considerable advantage over the younger, who were repeatedly forced away, so that it was just the stronger and larger birds who received the largest quantity of feedstuff, while the weaker and younger birds always had to be content with the remainder which the larger birds had left over at the beginning of the feedstuff chain, that is to say the feedstuff which was conveyed by the feedstuff chain finally to the free end.

It is obvious that this does not ensure a uniform feeding of all individual birds. These problems are of particular importance when it is sought to bring forward the sexual maturity of the birds, in order thus

to achieve the earliest possible egg production, namely production of heavy and large eggs. Finally it is known that the feedstuff conversion rate of the birds, that is to say the quantity of feedstuff supplied in dependence upon the increase of weight or egg output thereby achieved, is most favourable up to certain age limits, it being possible nowadays to determine these age limits or crucial dates very precisely. Feeding beyond this time is uneconomical, and it is of great importance that within this calculated period of time there is fed to each bird exactly the specific quantity of feedstuff which it needs to achieve a maximum feedstuff conversion. It is obvious that such a precisely quantity-regulated charging is not possible in automatically working installations hitherto with the old methods. Hitherto a remedy was obtained by the fact that in such intensive rearing installations the feeding was effected by hand, that is to say the predetermined quantities of feedstuffs were poured into individual feed trays by hand, so that thus it was ensured that there was the same quantity of feedstuff in every feed tray, it further being known how many birds can eat from one feed tray, without hindering one another in doing so. It is obvious that such a manner of working is complicated and expensive and the invention is based upon the problem of providing a remedy here.

In order to solve this problem upon which the invention is based, it is proposed to provide a storage container in each case, arranged in the connecting device between feed tray and supply device, which container has a specific size and the outflow opening of which is automatically lifted or opened after the filling even of the last feed tray connected to the supply device. It can be seen that

[Price 4s. 6d.]

BEST AVAILABLE COPY

now all storage containers on the feed trays are filled by a mechanical feedstuff supply device, for example a worm, namely until even the storage container of the last feed container connected to the supply device is completely filled. As soon as this storage container is filled shutting off of the feedstuff chain and now lifting of the outflow opening of the storage container take place through an automatic control arrangement. Thus at the same moment all storage containers of all feed trays are opened, all storage containers containing the same quantity. The hens or poultry rapidly adjust themselves to this style of feeding, and now wait at every feed tray until the feedstuff flows out. Since the flowing out of the feedstuff takes place simultaneously at all feed trays, displacement of the weaker hens by the stronger hens can now no longer take place. Moreover due to the size of the storage container the quantity of feedstuff intended for each feed tray and thus for the number of hens eating at such a feed tray is measured out exactly, and can be calculated exactly.

The storage container within a feed tray can be made of any desired size, adapted to the requirements in each case. If the storage container does not possess the size which is necessary in order to supply the quantity of feedstuff corresponding to the number of hens of the tray on emptying once, then a double or treble filling of the storage container takes place in succession and distributed over the day, so that it is ensured that in one day or within twenty-four hours the hens are supplied with exactly the quantity of feedstuff reached by the calculation. If it should occur that an exact multiple refilling of the storage container is not necessary, because the quantity of feedstuff results in a need to supply less feedstuff, then one or the other storage container can be set out of action by the fact that automatic opening of the storage container is prevented. The charging of the storage container is then still readily possible, and the manner of working of the device can be constantly controlled in a satisfactory manner in this way.

Moreover it is proposed in accordance with the invention to provide a tube connection connected to the supply device and arranged within the conically formed supply nozzle known *per se* of a feed tray, which tube connection has at its lower end a jacket movable in its longitudinal axis, which in the lowered position extends down to the bottom of the feed tray and thus together with the pipe connection forms the storage container, and in the raised position effects clearance of the outflow opening.

At the end of the actual feedstuff supply device there is arranged so-called control

container which on filling halts the supply device, for example the worm, through a pressure contact, and effects raising of the jacket of the storage container. A time switch mechanism can be provided here which automatically effects restarting of the supply device when repeated charging of the storage containers is necessary.

In order that the feed trays which are connected to the supply device may be adapted to the size of the hens in each case, for example to chicks and to large hens in the course of a breeding period, it is proposed to provide an adjustable height of the edge of the feed tray, which can be achieved due to the fact that the outer edge of the feed tray is connected with the bottom of the feed tray through a screw connection, so that by rotation of the outer edge the latter can now be moved upwards or downwards.

Further advantages and features of the arrangement according to the invention will appear from the following description of an example of embodiment of the invention which is represented diagrammatically in the accompanying drawings, wherein:—

Figure 1 shows a diagrammatic elevation of a feeding installation according to the invention,

Figure 2 shows a section through a feed tray constructed in accordance with the invention on a larger scale, and

Figure 3 shows a section through the control device and the control container at the end of the supply device for the feed trays.

In the drawings, 1 designates a reservoir or silo, in which there is stored for example the daily quantity of feedstuff for the hens. From this reservoir the actual supply device 2 for the feedstuff leads into the poultry house. This supply device 2 can consist of a tube 2a in which there rotates a worm which is known *per se* and is not represented in the drawings for reasons of clarity. To this supply device 2 there is now connected a plurality of feed trays 3, it being possible for these feed trays 3 to be fixedly mounted on the supply device, that is to say on the tube 2a. At the end of the supply device there is a control assembly or container 4, in which the devices for the actuation of the actual installation according to the invention are housed, and in which furthermore there are arranged the contacts which effect actuation of the installation in dependence upon the filling quantity.

The worm housed in the supply device 2 is driven by an electric motor 5. The reservoir 1, the supply device 2 and the electric motor 5 can be arranged on supports 6 or suspended on suspension devices 6a on the ceiling of the actual poultry house.

The actual construction of the feed tray can be seen on a larger scale from Figure 2. According to the example of embodiment as represented, to the tube 2a, which has an appropriate opening in the region of a feed tray, there is connected a supply nozzle 7 which leads downwards. This supply nozzle 7 is surrounded externally by a conical jacket 8, which acts as protective device and is known in the feed trays usual hitherto. On the lower end of the supply nozzle 7 there is arranged a similarly slightly conically formed jacket 9, which is movable in the direction of the longitudinal axis of the supply nozzle 7 and of its own longitudinal axis, that is to say it can be drawn upwards or as shown in the drawing, let downwards on the supply nozzle 7, so that now the space formed by the supply nozzle 7 and the jacket 9 forms a storage container 7, 9, where as may be seen the feedstuff is not able to flow out. The actuation of this jacket 9 takes place through a connection, for example a wire cord 10, which leads to the control apparatus 4. Here the wire cord 10 is connected to a motor 11. The wire cord 10 leads from the motor 11 to all feed trays 3 and is attached to the individual jackets 9, with interposition of a short connection 12, which is represented in chain lines in Figure 2. The connection element 12, formed similarly for example as wire cord, runs over a reversing pulley 12a and is secured to the cord 10.

In the control container 4 there is arranged a pressure contact 13, which is movable in the direction of the arrow *F* in Figure 3. Through the switches 14 and 15 this pressure contact 13 actuates both the motor 5 and the drive device 11 for the device actuating the individual storage containers 7, 9.

Beneath the protective jacket 8 of each feed tray 3 there is arranged the actual feed tray 16, which is situated firmly on the protective device 8, for example with interposition of the screw connection 17 according to Figure 2. Due to this screw connection 17 it is further possible to draw the feed tray 16 so high that now the protective jacket 8 rests tightly on the bottom of the feed tray, so that despite the fact that the jacket 9 is drawn upwards no feedstuffs can flow out. As indicated at 18, the upper edge 19 of the feed tray is connected to the bottom 16 of the feed tray through a threading, so that it is possible to adjust the height of the upper edge 19, so that thus the ideal edge height can be adjusted for the size of the birds in each case.

The manner of operation of the device is as follows:

The worm situated in the tube 2a is actuated by the motor 5, switched on for ex-

ample with interposition of a time clock, namely with interposition of the connection device 20 according to Figure 3. Thus feedstuff is taken from the reservoir 1 and conducted into the individual storage containers, which are formed from the tube connections 7 and the jackets 9. In this condition the jacket 9 is in its lowermost position, that is to say it tightly closes the outflow opening of the pipe connection 7. If now every individual storage container 7, 9 is filled, the feedstuff is conveyed into the control container 4 arranged at the end and here effects a pressure in the direction of the arrow *F* upon the contact 13. Thus through the intermediary of the contacts 15 and 14 the drive motor 5 for the worm is halted and now the drive motor 11 is set in action for the operation of the cord 10. By a brief rotation of this motor—according to the example of embodiment selected—the individual jackets 9 are now raised, so that the feedstuff situated in the storage container 7, 9 can flow out. It can be seen that due to this measure all the feed trays 3 of the entire installation are filled simultaneously with equal quantities of feedstuff. By the switching on of an appropriate time switch clock it is possible to lower the jackets 9 again by an opposite rotation of the motor, that is to say to close the storage containers and to effect a new filling of the storage containers. This cycle can be repeated as often as necessary until the requisite total quantity of feedstuff is distributed. If in calculation of the total quantity of feedstuff it results that in the last remainder not all containers must be filled, then either the traction means 12 can be disconnected from the lead 10, or the feed trays which are not to be charged are drawn upwards by operation of the screw 17, so that now they rest against the lower edge of the protective jacket 8, so that thus flowing out of the feedstuff is prevented, despite the fact that the storage containers 7, 9 are opened. It can be seen that thus with this installation any adaptation to the requirements in each case can be carried out without difficulty.

Obviously the invention is not limited to the example of embodiment as represented, but modifications thereof are possible without departing from the scope of the invention as defined in the appended claims.

#### WHAT WE CLAIM IS:—

1. A device for the automatic charging of feed trays in poultry-rearing installations with uniformly regulated quantities of feedstuff, utilizing a mechanical feedstuff supply device to which a plurality of feed trays is connected, characterised by a storage container of specific size arranged in each case in the connection between feed tray and supply device, the outflow opening of which storage container is automatically opened

after the filling of the last storage container connected to the supply device.

2. An installation according to Claim 1, characterised by a tube connected to the supply device and arranged within a conically formed protective jacket, which tube has at its lower end a jacket movable over the tube in its longitudinal axis, which in the lowered position extends to the bottom of the feed tray and thus with the tube connection forms the storage container, and in the raised position effects clearance of the outflow opening.

3. An installation according to Claims 1 and 2, characterised by a control container arranged at the end of the supply device, which on filling halts the supply device and effects raising of the jackets, through a pressure contact.

4. An installation according to Claims 1

to 3, characterised by a time switch mechanism which automatically effects restarting of the supply device.

5. An installation according to claims 1 to 4, characterised by an adjustable height of the edge of the feed tray.

6. An installation according to Claim 5, characterised in that the outer edge of the feed tray is adjustable in its height from the bottom of the feed tray through a screw connection.

7. A device for the automatic charging of feed trays in poultry-rearing installations, substantially as herein before described with reference to, and as shown in, the accompanying drawings.

HUGHES & YOUNG.

Agents.

119-52.A.F

31

FIG. 2

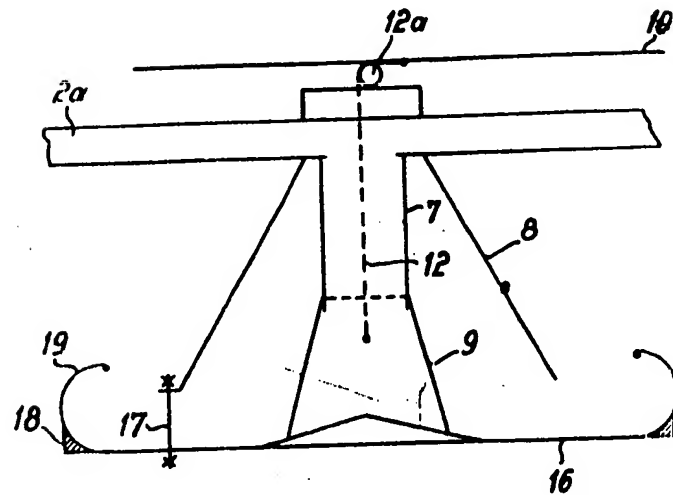


FIG. 3

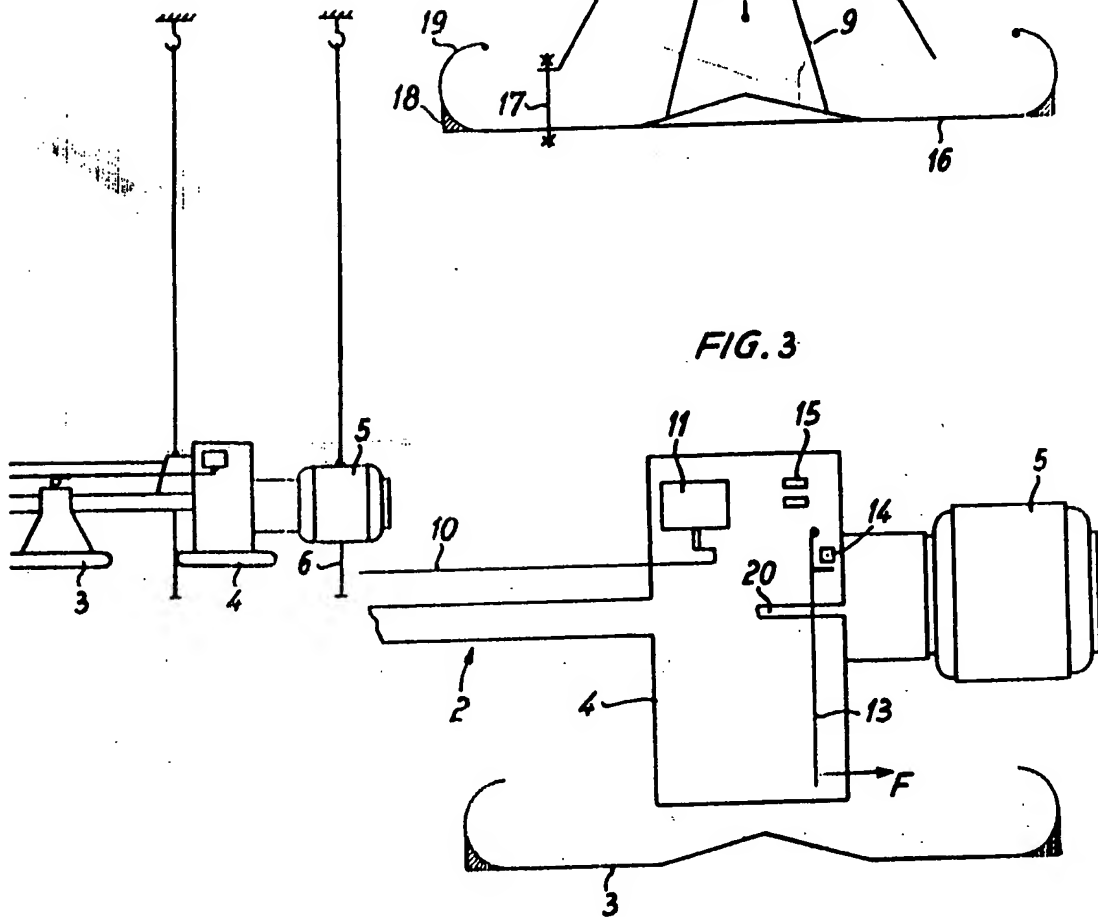


FIG. 1

